What is Claimed is:

1. A wireless communications system comprising:

a terrestrial wireless network that is configured to transmit wireless communications including Global Positioning System (GPS) data over a satellite frequency band; and

a mobile terminal that is configured to receive the wireless communications including the GPS data from the terrestrial wireless network over the satellite frequency band and to perform pseudo-range measurements using the GPS data that is received over the satellite frequency band.

2. A wireless communications system according to Claim 1 further comprising a network operations center and wherein the mobile terminal is further configured to transmit the pseudo-range measurements to the network operations center.

3. A wireless communications system according to Claim 2 wherein the network operations center is configured to receive the pseudo-range measurements and to determine a position of the mobile terminal using the pseudo-range measurements.

4. A wireless communications system according to Claim 3 wherein the network operations center is further configured to transmit the position of the mobile terminal to the mobile terminal.

5. A wireless communications system according to Claim 2 wherein the mobile terminal is configured to transmit the pseudo-range measurements to the network operations center via the terrestrial wireless network.

6. A wireless communications system according to Claim 2 further comprising a space-based component that is configured to wirelessly communicate with the mobile terminal over the satellite frequency band and wherein the mobile terminal is configured to transmit the pseudo-range measurements to the network operations center via the space-based component.

7. A wireless communications system according to Claim 1 wherein the mobile terminal is further configured to receive GPS coarse/acquisition (C/A) signals from a plurality of GPS satellites, to estimate Doppler shifts in the GPS C/A signals and to estimate received code phases of the GPS C/A signals using the Doppler shifts that are estimated.

8. A wireless communications system according to Claim 7 wherein the GPS data that is received from the terrestrial wireless network includes a Doppler shift that is measured at the terrestrial wireless network and a code phase that is measured at the terrestrial wireless network and wherein the mobile terminal is further configured to estimate residual Doppler shifts in the GPS C/A signals due to mobile terminal motion using the Doppler shift and code phase that are measured at the terrestrial wireless network and to estimate the code phases of the GPS C/A signals using the Doppler shift that is estimated.

9. A wireless communications system according to Claim 1 wherein the satellite frequency band is outside the GPS frequency band.

10. A terrestrial wireless network for a cellular wireless communications system comprising:

a plurality of terrestrial base stations that are configured to transmit wireless communications including global Positioning System (GPS) data to mobile terminals over a satellite frequency band.

11. A terrestrial wireless network according to Claim 10 wherein the plurality of terrestrial base stations are further configured to receive pseudo-range measurements from mobile terminals over the satellite frequency band.

12. A terrestrial wireless network according to Claim 11 further comprising a network operations center and wherein the plurality of terrestrial base stations are further configured to transmit the pseudo-range measurements to the network operations center.

13. A terrestrial wireless network according to Claim 12 wherein the network operations center is configured to receive the pseudo-range measurements and to determine a position using the pseudo-range measurements.

14. A terrestrial wireless network according to Claim 13 wherein the network operations center is further configured to transmit the position of the mobile terminal to the mobile terminal.

15. A terrestrial wireless network according to Claim 10 wherein the terrestrial base stations comprise terrestrial cellular network base stations, ancillary terrestrial network base stations and/or access points of a wireless local and/or wide area network.

16. A terrestrial wireless network according to Claim 10 wherein the satellite frequency band is outside the GPS frequency band.

17. A mobile terminal comprising:

a receiver that is configured to receive wireless communications including Global Positioning System (GPS) data over a satellite frequency band that is outside a GPS frequency band; and

a processor that is configured to perform pseudo-range measurements using the GPS data that is received over the satellite frequency band that is outside the GPS frequency band.

18. A mobile terminal according to Claim 17 further comprising a transmitter that is configured to transmit the pseudo-range measurements over the satellite frequency band that is outside the GPS frequency band.

19. A mobile terminal according to Claim 17 wherein the receiver is further configured to receive GPS C/A signals from a plurality of GPS satellites and wherein the processor is further configured to estimate Doppler shifts in the GPS C/A signals and to estimate received code phases of the GPS C/A signals using the Doppler shifts that are estimated.

20. A mobile terminal according to Claim 19 wherein the GPS data that is received from a terrestrial wireless network includes a Doppler shift that is measured at the terrestrial wireless network and a code phase that is measured at the terrestrial wireless network and wherein the processor is further configured to estimate residual Doppler shifts in the GPS C/A signals due to mobile terminal motion using the Doppler shift and code phase that are measured at the terrestrial wireless network and to estimate the code phases of the GPS C/A signals using the Doppler shift that is estimated.

21. A mobile terminal comprising:

a receiver that is configured to receive Global Positioning System (GPS) C/A signals from a plurality of GPS satellites; and

a processor that is configured to estimate Doppler shifts in the GPS C/A signals and to estimate received code phases of the GPS C/A signals using the Doppler shifts that are estimated.

22. A mobile terminal according to Claim 21 wherein the receiver is further configured to receive from a wireless network a Doppler shift that is measured at the wireless network and a code phase that is measured at the wireless network and wherein the processor is further configured to estimate residual Doppler shifts in the GPS C/A signals due to mobile terminal motion using the Doppler shift and code phase that are measured at the wireless network and to estimate the received code phases of the GPS C/A signals using the Doppler shift that is estimated.

23. A mobile terminal according to Claim 22 wherein the processor is configured to estimate the residual Doppler shifts in the GPS C/A signals due to mobile terminal motion by bandpass filtering the GPS C/A signals into frequency slices, despreading the frequency slices and estimating the Doppler shifts from the frequency slices that are despread.

24. A mobile terminal according to Claim 23:

wherein the processor is configured to bandpass filter the GPS C/A signals into frequency slices by frequency translating the GPS C/A signals, low pass filtering

the GPS C/A signals that are frequency translated and downsampling the low pass filtered, frequency translated GPS C/A signals; and

wherein the processor is configured to despread the frequency slices by generating an internal reference code sequence, frequency translating the internal reference code sequence for each frequency slice, low pass filtering the frequency translated reference code sequences and multiplying by the downsampled low pass filtered, frequency translated GPS C/A signals.

25. A mobile terminal according to Claim 24 wherein the processor is configured to estimate the Doppler shifts from the frequency slices that are despread by frequency-translating the frequency slices that are despread by the Doppler shift frequency that is measured at the wireless network to obtain the residual Doppler shift due to mobile terminal motion, transforming the despread frequency translated slice sample points to the frequency domain, converting frequency domain complex values to magnitude values, and adding the magnitude values on a point-by-point basis across the frequency slices.

26. A mobile terminal according to Claim 25 wherein the processor is configured to estimate the code phases of the GPS C/A signals by removing a total Doppler shift by frequency-translating the GPS C/A signals by a sum of the residual Doppler shifts that are estimated plus the Doppler shift that is measured at the wireless network, summing segments of the GPS C/A signals from which the total Doppler shift has been removed, correlating the summed segments with an internally generated code frame and determining a time offset corresponding to a peak magnitude squared value.

27. A mobile terminal according to Claim 25 wherein the processor is configured to estimate the code phases of the GPS C/A signals by calculating phases of the frequency slice values that have been converted to the frequency domain, determining phase angles corresponding to the estimated Doppler shift frequency for each of the slices, and determining a residual code phase from the phase angles.

28. A mobile terminal according to Claim 22 wherein the wireless network is a terrestrial wireless network.

29. A mobile terminal according to Claim 28 wherein the terrestrial wireless network comprises a terrestrial cellular network, an ancillary terrestrial network and/or a wireless local and/or wide area network.

30. A mobile terminal according to Claim 22 wherein the wireless network is a satellite wireless network and wherein the Doppler shift and C/A code phase that are measured at the satellite wireless network are referenced to a point on the earth determined by measuring relative differences in received signal levels between adjacent satellite beams at the mobile terminal.

31. A mobile terminal according to Claim 22 wherein the wireless network is a satellite wireless network and wherein the Doppler shift and C/A code phase that are measured at the satellite wireless network are referenced to a point on the earth determined by measuring path delays between the mobile terminal and a satellite gateway via at least two satellites.

32. A mobile terminal according to Claim 21 further comprising a transmitter that is configured to transmit the estimated Doppler shifts and/or the estimated received code phases of the GPS C/A signals.

33. A mobile terminal according to Claim 21, wherein the mobile terminal includes a GPS processor and a cellular data transceiver therein.

34. A mobile terminal according to Claim 22, wherein the mobile terminal includes a GPS processor and a cellular voice and data transceiver therein.

35. A mobile terminal according to Claim 22, wherein the mobile terminal includes a GPS processor, a terrestrial cellular voice and data transceiver and a satellite cellular voice and data transceiver therein.

36. A wireless communications method comprising:

transmitting wireless communications including Global Positioning System (GPS) data over a terrestrial wireless network using a satellite frequency band;

receiving the wireless communications including the GPS data from the terrestrial wireless network at a mobile terminal over the satellite frequency band; and

performing pseudo-range measurements at the mobile terminal using the GPS data that is received over the satellite frequency band.

37. A wireless communications method according to Claim 36 further comprising transmitting the pseudo-range measurements from the mobile terminal to a network operations center.

38. A cellular wireless communications method according to Claim 37 further comprising receiving the pseudo-range measurements and determining a position of the mobile terminal using the pseudo-range measurements, at the network operations center.

39. A wireless communications method according to Claim 38 further comprising receiving the position of the mobile terminal at the mobile terminal from the network operations center.

40. A wireless communications method according to Claim 37 wherein transmitting the pseudo-range measurements comprises transmitting the pseudo-range measurements to the network operations center via the terrestrial wireless network.

41. A wireless communications method according to Claim 37 further comprising wirelessly communicating between a space-based component and the mobile terminal over the satellite frequency band and wherein transmitting the pseudo-range measurements comprises transmitting the pseudo-range measurements to the network operations center via the space-based component.

42. A wireless communications method according to Claim 36 wherein the following is performed at the mobile terminal:

receiving GPS C/A signals from a plurality of GPS satellites;

estimating Doppler shifts in the GPS C/A signals; and

estimating received code phases of the GPS C/A signals using the Doppler shifts that are estimated.

43. A wireless communications method according to Claim 42 wherein the GPS data that is received from the terrestrial wireless network includes a Doppler shift that is measured at the terrestrial wireless network and a code phase that is measured at the terrestrial wireless network;

wherein estimating Doppler shifts comprises estimating residual Doppler shifts in the GPS C/A signals due to mobile terminal motion using the Doppler shift and code phase that are measured at the terrestrial wireless network; and

wherein estimating code phases comprises estimating the code phases of the GPS C/A signals using the Doppler shift that is estimated.

44. A wireless communications method according to Claim 36 wherein the satellite frequency band is outside the GPS frequency band.

45. A terrestrial wireless communications method comprising:

terrestrially transmitting wireless communications including Global Positioning System (GPS) data to mobile terminals over a satellite frequency band.

46. A terrestrial wireless method according to Claim 45 further comprising:

terrestrially receiving pseudo-range measurements from mobile terminals over the satellite frequency band.

47. A terrestrial wireless method according to Claim 47 further comprising:

terrestrially transmitting the pseudo-range measurements to a network operations center.

48. A terrestrial wireless method according to Claim 46 further comprising:

receiving the pseudo-range measurements and determining a position using the pseudo-range measurements, at the network operations center.

49. A terrestrial wireless method according to Claim 48 further comprising receiving the position of the mobile terminal at the mobile terminal from the network operations center.

50. A terrestrial wireless method according to Claim 45 wherein the satellite frequency band is outside the GPS frequency band.

51. A mobile terminal operating method comprising:

receiving wireless communications including Global Positioning System (GPS) data over a satellite frequency band that is outside a GPS frequency band; and

performing pseudo-range measurements using the GPS data that is received over the satellite frequency band that is outside the GPS frequency band.

52. A method according to Claim 51 further comprising:

transmitting the pseudo-range measurements over the satellite frequency band that is outside the GPS frequency band.

53. A method according to Claim 51:

wherein receiving further comprises receiving GPS C/A signals from a plurality of GPS satellites; and

wherein performing further comprises estimating Doppler shifts in the GPS C/A signals and estimating received code phases of the GPS C/A signals using the Doppler shifts that are estimated.

54. A method according to Claim 53:

wherein the GPS data that is received includes a Doppler shift that is measured at a terrestrial wireless network and a code phase that is measured at the terrestrial wireless network;

wherein estimating Doppler shifts comprises estimating residual Doppler shifts in the C/A signals due to mobile terminal motion using the Doppler shift and code phase that are measured at the terrestrial wireless network; and

wherein estimating received code phases comprises estimating the code phases of the GPS C/A signals using the Doppler shift that is estimated.

55. A mobile terminal operating method comprising:

receiving Global Positioning System (GPS) C/A signals from a plurality of GPS satellites;

estimating Doppler shifts in the GPS C/A signals; and

estimating received code phases of the GPS C/A signals using the Doppler shifts that are estimated.

56. A method according to Claim 55:

wherein receiving further comprises receiving from a wireless network a Doppler shift that is measured at the wireless network and a code phase that is measured at the wireless network;

wherein estimating Doppler shifts comprises estimating residual Doppler shifts in the C/A signals due to mobile terminal motion using the Doppler shift and code phase that are measured at the wireless network; and

wherein the estimating received code phases comprises estimating the code phases of the GPS C/A signals using the Doppler shift that is estimated.

57. A method according to Claim 56 wherein estimating residual Doppler shifts in the GPS C/A signals due to mobile terminal motion comprises:

bandpass filtering the GPS C/A signals into frequency slices;

despreading the frequency slices; and

estimating the Doppler shifts from the frequency slices that are despread.

58. A method according to Claim 57:

wherein bandpass filtering the GPS C/A signals into slices comprises:

frequency translating the GPS C/A signals;

low pass filtering the GPS C/A signals that are frequency translated; and

downsampling the low pass filtered, frequency translated GPS C/A signals; and

wherein despreading the frequency slices comprises:

generating an internal reference code sequence;

frequency translating the internal reference code sequence for each frequency slice;

low pass filtering the frequency translated reference code sequences; and

multiplying by the downsampled low pass filtered, frequency translated GPS C/A signals.

59. A method according to Claim 58 wherein estimating the Doppler shifts from the frequency slices that are despread comprises:

frequency-translating the frequency slices that are despread by the Doppler shift frequency that is measured at the wireless network to obtain a residual Doppler shift due to mobile terminal motion;

transforming the frequency-translated and despread slice sample points to the frequency domain;

converting frequency domain complex values to magnitude values; and

adding the magnitude values on a point-by-point basis across the frequency slices.

60. A method according to Claim 59 wherein estimating the code phases of the GPS C/A signals comprises:

removing a total Doppler shift by frequency-translating the GPS C/A signals by a sum of the residual Doppler shifts that are estimated plus the Doppler shift that is measured at the wireless network;

summing segments of the GPS C/A signals from which the total Doppler shift has been removed;

correlating the summed segments with an internally generated code frame; and

determining a time offset corresponding to a peak magnitude squared value.

61. A method according to Claim 59 wherein estimating the code phases of the GPS C/A signals comprises:

calculating phases of the frequency domain slice values;

determining phase angles corresponding to the estimated Doppler shift frequency for each of the slices; and

determining a residual code phase from the phase angles.

62. A method according to Claim 56 wherein the wireless network is a terrestrial wireless network.

63. A method according to Claim 62 wherein the terrestrial wireless network comprises a terrestrial cellular network, an ancillary terrestrial network and/or a wireless local and/or wide area network.

64. A method according to Claim 56 wherein the wireless network is a satellite wireless network and wherein the Doppler shift and C/A code phase that are measured at the satellite wireless network are referenced to a point on the earth determined by measuring relative differences in received signal levels between adjacent satellite beams at the mobile terminal.

65. A method according to Claim 56 wherein the wireless network is a satellite wireless network and wherein the Doppler shift and C/A code phase that are measured at the satellite wireless network are referenced to a point on the earth determined by measuring path delays between the mobile terminal and a satellite gateway via at least two satellites.

66. A method according to Claim 55 further comprising transmitting the estimated Doppler shifts and/or the estimated received code phases of the GPS C/A signals.

67. A method according to Claim 55, wherein the mobile terminal includes a GPS processor and a cellular data transceiver therein.

68. A method according to Claim 56, wherein the mobile terminal includes a GPS processor and a terrestrial cellular voice and data transceiver therein.

69. A method according to Claim 56, wherein the mobile terminal includes a GPS processor, a terrestrial cellular voice and data transceiver and a satellite cellular voice and data transceiver therein.